What is claimed is:

1. A signal processing device comprising:

first to Nth sub signal processing sections each of which is given $(N \times t + i)$th frame signals (i and t are integers, N is a natural number, and $0 \leq i < N$) of a first digital signal framed for each predetermined time interval and each of which completes a first process within a period $(N \times T)$ (T is a real number); and

a main signal processing section which converts a signal processed in said $(i + 1)$th sub signal processing section into a second digital signal by completing a second process within a period T.

2. The signal processing device of claim 1, wherein said signal processing device further comprising:

a distribution section inputting said first digital signal to one of said first to Nth sub signal processing sections for each frame interval one after another; and

a selection section selectively outputting one of the after-process signal outputted from said first to Nth sub signal processing sections for each frame interval one after another to input the signal to said main signal processing section.

3. The signal processing device of claim 1, wherein said signal processing device further comprising:

a first memory storing said frame signal of said first digital signal

one after another;

a second memory storing said frame signal of said second digital signal one after another; and

a distribution and selection section which sends the $(N \times t + i)$th frame signal (i and t are integers, and $0 \leq i < N$) obtained from said main signal processing section to said $(i + 1)$th sub signal processing section, receives the signal which said first process has been performed for the $(N \times (t - 1) + i)$th frame signal from the $(i + 1)$th sub signal processing section, and outputs said signal to said main signal processing section; and

wherein said first to Nth sub signal processing sections are connected to said distribution and selection section, performs the first process for said frame signal received from said distribution and selection section, and sends the after-process signal to said distribution and selection section; and

wherein said main signal processing section is connected to said first and second memories, picks out said frame signal from said first memory for each time interval T one after another to output said frame signal to said distribution and selection section, and performs said second process for said signal received from said distribution and selection section to store this after-process signal in said second memory.

4. The signal processing device of claim 1, wherein

said second process contains a process employing information generated in the past frame time; and

said first process excludes a process employing information generated in the past frame time.

5. The signal processing device of claim 4, wherein

said first digital signal is a compressed and encoded signal of an audio signal;

said second digital signal is a PCM signal of an audio signal;

said first process contains a process picking out information from the compressed and encoded signal to convert the information into information of a frequency spectrum; and

said second process contains a process converting said information of said frequency spectrum into said PCM signal of time base.

6. The signal processing device of claim 5, wherein

said first process contains a decoding process of a variable length code; and

said second process contains an inverse MDCT process.

7. The signal processing device of claim 5, wherein

said first process contains an inverse quantizing process inversely quantizing said compressed and encoded signal, and

said second process contains a sub-band synthesis filter bank process.

8. The signal processing device of claim 1, wherein

division is made for said first process and said second process so that the calculation period necessary for said first process is N times the calculation period necessary for said second process.

9. A signal processing method converting a first digital signal into a second digital signal by employing first to Nth sub signal processing sections and a main signal processing section, comprising the following steps of

completing said first process within a period (N × T) (T is a real number) in said respective sub signal processing sections for (N × t + i)th frame signals (i and t are integers, N is a natural number, and $0 \leq i < N$) of the first digital signal framed for each predetermined interval given by the first to Nth sub signal processing sections one after another; and

converting a signal processed in said (i + 1)th sub signal processing section into the second digital signal by completing said second process within a time T in said main signal processing section.

10. A signal processing device comprising:

a main signal processing section which is given (N × t + i)th frame signals (i and t are integers, N is a natural number, and $0 \leq i < N$) of a first digital signal framed for each predetermined time interval and which completes a first process within a period T (T is a real number); and

first to Nth sub signal processing sections each of which is given the (i + 1)th frame signal after the signal had been processed in said main signal processing section and converts said frame signal into a second

digital signal by completing the second process within a period (N × T).

11. The signal processing device of claim 10, wherein said signal processing device further comprising:

a distribution section inputting said digital frame signal outputted from said main signal processing section into said first to Nth sub signal processing sections for each frame interval one after another; and

a selection section selectively outputting one of the after-process signal outputted from said first to Nth sub signal processing sections for each frame interval one after another.

12. The signal processing device of claim 10, wherein said signal processing device further comprising:

a first memory storing said frame signal of said first digital signal one after another;

a second memory storing said frame signal of said second digital signal one after another; and

a distribution and selection section which sends a signal performed said first process and obtained from said main signal processing section to said (i + 1)th sub signal processing section, receives a signal which said second process has been performed for the (N × (t - 1) + i)th frame signal from said (i + 1)th sub signal processing section, and outputs said signal to said main signal processing section; and

wherein said main signal processing section is connected to said first and second memories, picks out a frame signal from said first memory

for each time interval T one after another, performs said first process for said (N × t + i)th frame signal to output said frame signal to said distribution and selection section, and stores this after-process signal received from said distribution and selection section in said second memory; and

wherein said first to Nth sub signal processing sections which performs said second process for said frame signal received from said distribution and selection section, and sends the after-process signal to said distribution and selection section.

13. The signal processing device of claim 10, wherein

said first process contains a process employing information generated in the past frame time; and

said second process excludes a process employing information generated in the past frame time.

14. The signal processing device of claim 13, wherein

said first digital signal is a PCM signal of an audio signal;

said second digital signal is a compressed and encoded signal of an audio signal;

said first process contains a process converting said PCM signal into information of a frequency spectrum; and

said second process contains a process encoding and compressing said information of said frequency spectrum.

15. The signal processing device of claim 14, wherein

said first process contains a MDCT process; and

said second process contains a Hoffman coding process.

16. The signal processing device of claim 14, wherein

said first process contains a sub-band analysis filter bank process; and

said second process contains a quantizing process.

17. The signal processing device of claim 10, wherein

division is made for said first process and said second process so that the calculation period necessary for said second process is N times the calculation period necessary for said first process.

18. A signal processing method converting a first digital signal into a second digital signal by employing first to Nth sub signal processing sections and a main signal processing section, comprising the following steps of:

completing said first process within a period T (T is a real number) in said main processing section for $(N \times t + i)$th frame signals (i and t are integers, N is a natural number, and $0 \leq i < N$) of the first digital signal framed for each predetermined time interval, and

converting said$(N + 1)$th frame signal processed by said main signal processing section and given to said first to Nth sub signal processing section one after another, into said second digital signal by completing

said second process within a period (N × T) in said first to Nth sub signal processing sections.

19. A portable type apparatus comprising:

an audio signal input section inputting an encoded audio signal;

a signal processing device of claim 1 decoding said encoded audio signal; and

an audio signal output section outputting said decoded audio signal.

20. A portable type apparatus comprising:

an audio signal input section inputting an audio signal;

a signal processing device of claim 2 encoding said audio signal; and

an memory holding said encoded audio signal.